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reflectivity. Whitehead states in the Abstract 'the cavity length L is such that resonance occurs close to the long wavelength side of the unbiased MQW absorption edge so that application of a bias signal to the MQW causes the reflectivity of the cavity to become close to zero...' With regard to the cavity length, Whitehead states, at column 5, lines 54-57 "... the cavity length is set so as to put the cavity resonance at the wavelength..." Whitehead further states, at column 6, lines 10-11 "With the device we have described here it is possible to vary the bias, and thus the absorption, to tune the reflectivity through a minimum over a range of wavelengths..." Thus, while Whitehead explicitly states that the bias may be varied, Whitehead neither describes nor suggests moving one of the reflectors (thereby varying the cavity length) as recited in the claims of the present invention. In particular, Whitehead neither describes nor suggests the limitation of claim 2 of "...adjusting said first reflector by application of a voltage across the pair of electrodes to change said given length of said resonating cavity..." Accordingly, for at least the reason that Whitehead fails to describe or suggest every limitation of the claim, the rejection under 35 U.S.C. §102 is improper and should be withdrawn.

Rejections under 35 U.S.C. §103

Claims 1 and 3-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Whitehead in view of Liu (U.S. Pat. No. 5,510,914).

Liu describes analog phase modulators comprising smectic liquid crystal cells wherein the layers are specifically not aligned perpendicular to the cell walls. Application of an analog electric field perpendicular to the cell walls bends the molecules in an analog fashion in a plane not parallel to the cell walls and thereby provides analog phase modulation of incident light. The

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invention of Liu further provides Fabry-Perot devices containing these analog phase modulators within the resonance cavity. Applicants note that Liu shows, in Equation 1, that the cavity length L is a constant that is input to the equations for the Fabry-Perot resonator.

The Examiner states, at page 3 of the Office Action, that Whitehead "does not specifically show a means for adjusting the length of the resonant cavity, the first reflector being fixedly mounted and the second reflector being movably mounted. Liu et al shows that it is known to provide a means for adjusting the cavity mechanically or by changing the refractive index (col. 1, lines 33-36) and the office interprets this to mean that one or both of the reflectors are movable and/or stationary this being reasonably based upon reflectors define the cavity therefore by adjusting the cavity the reflectors can be adjustable or stationary. Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teaching of Whitehead with the adjusting means of Liu et al for the purpose of tuning the cavity..."

Applicants note that "...The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) ..." Applicant's note that, although Liu does state that cavity length can be changed mechanically or by changing the refractive index, Liu also states that the response time for changing cavity length is 'milliseconds', thereby inferring that such a process is undesirable. The teaching away of Liu cannot be ignored, and thus Applicants submit that there is no motivation for the modification suggested by the Examiner. Without a proper motivation, the rejection is improper and should be withdrawn.

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Further, Applicants argue that even if a motivation for modifying the references as suggested by the Examiner could be found in the references, the references neither describe nor suggest the structure elements recited in independent claims 1 3 and 6. Accordingly, for at least these reason, Applicants submit that the rejections under 35 U.S.C. §103 are overcome and should be withdrawn. Dependent claims 4-5 and 7-9 serve to add further patentable limitations to the allowable parent claims, but are allowable for at least the reasons put forth above with regard to the parent claims.

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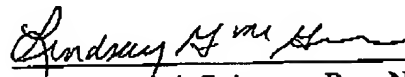
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Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Lindsay G. McGuinness, Applicants' Attorney at 978-264-6664 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

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Date


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